[0013] According to the invention, the flexible structure is optimally tensioned and stiffened in its tensioned function state by the use of a shape-memory polymer, whereby for example undesirable folding or similar of the flexible structure can be reliably prevented. In particular, by the additional stiffening of the flexible structure according to the invention, for example a larger flexible structure may be used which allows the use of a larger number of solar cells in the solar cell arrangement, which in turn is associated with a higher energy gain, and a desired charging of the electric drive energy store of the motor vehicle takes less time. Overall therefore, the solar cell arrangement according to the invention is more effective than conventional arrangements.

[0014] Depending on application, the shape-memory polymer may be arranged at different locations of the solar cell arrangement. The shape-memory polymer may be stimulated for example by a temperature change.

[0015] The element arranged on the flexible structure and made of a shape-memory polymer is a separately produced element attached to the flexible structure.

[0016] The flexible structure may for example be formed from a shape-memory polymer at fold lines of the flexible structure in its tensioned state. The flexible structure may consist partly or completely for example of a fabric, a plastic or a fabric-reinforced plastic material. The solar cell arrangement according to the invention may also have two or more corresponding flexible structures.

[0017] The chamber may for example run along a fold line of the flexible structure in its tensioned function state and thus act as a support. The wall of the chamber may be formed at least partially from the flexible structure. Alternatively, the wall of the chamber may be produced separately and connected to the flexible structure. The solar cell arrangement according to the invention may also have two or more corresponding chambers.

[0018] The solar cell unit may have several solar cells and also be formed flexibly. The solar cell arrangement according to the invention may also have two or more solar cell units arranged on the flexible structure.

[0019] The transfer device may be connected to the inflatable chamber via a line and/or an actuatable valve unit. The transfer device may comprise at least one electrically controllable fan unit which is connected to the inflatable chamber. By means of the valve unit, the transfer device may for example maintain the pressure in the inflated chamber in order to hold the flexible structure in the tensioned function state without the need to keep the fan unit activated for this.

[0020] The above object is also achieved by a motor vehicle with the features of claim **2**, which comprises at least one solar cell arrangement according to any of the embodiments cited above or a combination of at least two of these embodiments.

[0021] The advantages outlined above in connection with the solar cell arrangement are also associated correspondingly with the motor vehicle. The motor vehicle may in particular be a car. The motor vehicle may in particular be an electric vehicle.

[0022] According to an advantageous embodiment, the flexible structure is arranged and configured such that in the tensioned function state, it forms a hood covering the motor vehicle from the top and at the side. The hood may enclose the motor vehicle almost completely at the top and at the side in order to form a hood with as large a surface area as possible, which allows the use of a large number of solar cell units. The hood also protects the passenger compartment from solar irradiation and an associated heating.

[0023] A further advantageous embodiment provides that the flexible structure is arranged and configured such that in the tensioned function state, it forms a large-area screen on an inside of a vehicle window facing a passenger compartment of the motor vehicle. In this way, the flexible structure in its tensioned function state, the solar cell unit arranged thereon, and the chamber arranged on the flexible structure are arranged inside the passenger compartment so as to be protected and secure against vandalism, and protected from the weather. Due to the flexible structure present in its tensioned function state and formed for example as a wall or similar, the passenger compartment is also protected from solar irradiation through the vehicle window and an associated heating.

[0024] According to a further advantageous embodiment, the motor vehicle comprises at least one storage space for storing the flexible structure in its slack storage state, and at least one retraction device for retracting the flexible structure in its slack storage state into the storage space. The flexible structure, with the components of the solar cell arrangement arranged thereon, is arranged inside the storage space so as to be protected during travel of the motor vehicle. The retraction device may for example have at least one electrically actuatable winding unit onto which the flexible structure, in its slack storage state, can be wound for retraction into the storage space.

[0025] According to a further advantageous embodiment, the storage space is arranged in a roof region of the motor vehicle. This is advantageous in particular if the flexible structure is arranged and formed such that, in the tensioned function state, it forms a hood covering the motor vehicle from the top and at the side. The solar cell arrangement here may for example comprise two or more flexible structures which may be deployed from the storage space in different directions. The storage space may be formed for example in the manner of a roof box or similar.

[0026] According to a further advantageous embodiment, the motor vehicle has at least one vehicle electronics connected to the transfer device and the retraction device, and configured to actuate the transfer device during a parked condition of the motor vehicle, in order to automatically transfer the flexible structure, which is fully present in the storage space, from the slack stowage state into the tensioned function state, and thereby move the flexible structure out of the storage space, and after receiving a signal indicating an impending end of the parked situation, to actuate the retraction device to automatically retract the flexible structure, again in its slack stowage state, completely back into the storage space. In this way, a fully automated actuation of the solar cell arrangement is possible, so that the handling of the motor vehicle is not adversely affected by the presence of the solar cell arrangement. The signal indicating an impending end of the parked condition may for example be a previously stored starting time or a radio signal from a radio remote control of the motor vehicle.

[0027] Further advantageous embodiments of the invention are given in the subclaims and the following description of the figures. The drawing shows: